UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,078	09/09/2003	Harald Bothe	60282.00108	9178

32294   7590   06/27/2007

SQUIRE, SANDERS & DEMPSEY L.L.P.
14TH FLOOR
8000 TOWERS CRESCENT
TYSONS CORNER, VA 22182

EXAMINER
PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
06/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	**Applicant(s)**
Office Action Summary	10/657,078	BOTHE ET AL.
	Examiner	**Art Unit**	
	Sudhanshu C. Pathak	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*Sept. 9th, 2003*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6-9,11-15 and 18-21* is/are rejected.

7)☒ Claim(s) *2,5,10,16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>*Sept. 9th, 2003*</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1. Claims 1-21 are pending in the application.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 18-20 are rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter.

In regards to Claim 18 (independent Claim), Claim 18 merely discloses a computer program (<u>functional descriptive steps</u>), producing no practical application, and do not define any structural and functional interrelationship between the computer programs and other claimed elements of a computer which permit the computer program functionality to be realized, thereby producing no tangible, concrete and useful results. (See Pages 52-54 of the Interim Guidelines).

A suggested correction to overcome the rejection is "A computer readable medium encoded with computer executable instructions for performing a method comprising....".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3 (method) & 9, 11, 21 (apparatus-system) & 18-20 (computer program product) are rejected under 35 U.S.C. 102(e) as being anticipated by Hasegawa et al. (6,853,678).

In regards to Claims 1, 9, 14 & 18-21, Hasegawa discloses a method (apparatus-system-computer program) of synchronizing with a pattern sequence (Abstract, lines 1-5 & Fig. 4), the method (apparatus-system) comprising: a receiver which includes: a first correlation step of correlating symbols of a first pattern sequence, the symbols comprising amplitude and phase information, thereby obtaining a first differential phase information sequence (Column 3, Eq. 2 & Fig. 4, element 35); a second correlation step of correlating symbols of a second pattern sequence, the symbols comprising amplitude and phase information, thereby obtaining a second differential phase information sequence (Column 3, Eq. 4 & Fig. 4, element 37); a third correlation step of correlating the first and second differential phase information sequences, thereby obtaining a correlation result (Column 3, lines 39-45); and a step of determining a synchronization between the first and second pattern sequences on the basis of the obtained correlation result (Column 3, lines 46-67). Hasegawa further discloses a system for synchronizing a pattern sequence comprising a transmitter (Fig. 1, elements 2-1....2-n), which includes: means for generating symbols of a pattern sequence to be used for synchronization; and transmitting means for transmitting the symbols of the pattern sequence (Column 1, lines 12-25) {Interpretation: The reference discloses the receiver extracts C/A codes from the

received GPS signals therefore, it is inherent that the pattern sequence (codes) is transmitted by the transmitters}. Hasegawa further discloses the synchronization process implemented in the information-processing device (Fig. 1, element 5) {Interpretation: The reference discloses the synchronization process implemented in the information-processing device, which is interpreted to include a processor, which requires implementation in software. Furthermore, it is inherent to implement the correlation process as a computer program}.

In regards to Claims 3 & 11, Hasegawa discloses a method (apparatus-system-computer program) of synchronizing with a pattern sequence as described above. Hasegawa further discloses phase information due to a mismatch of frequency information between the symbols of the first pattern sequence and the symbols of the second pattern sequence is detected on the basis of the correlation result (Column 3, lines 45-67).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 4, 6, 8 (method) & 13 (apparatus) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (6,853,678) in view of Applicant Admitted Prior Art (AAPA).

In regards to Claims 4 & 13, Hasegawa discloses a method of synchronizing with a pattern sequence as described above. However, Hasegawa does not disclose the symbols of the second pattern sequence are contained in a data symbol stream and are modulated in a different way from the data symbols in the data symbol stream, and wherein the method further comprises: a step of detecting the symbols of the second pattern sequence in the data symbol stream on the basis of the different modulation.

AAPA discloses the symbols of the second pattern sequence are contained in a data symbol stream and are modulated in a different way from the data symbols in the data symbol stream, and wherein the method further comprises: a step of detecting the symbols of the second pattern sequence in the data symbol stream on the basis of the different modulation (Specification, Page 1, Paragraph 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA discloses the symbols of the second pattern sequence are contained in a data symbol stream and are modulated in a different way from the data symbols in the data symbol stream, and wherein the method further comprises: a step of detecting the symbols of the second pattern sequence in the data symbol stream on the basis of the different modulation and this is implemented in the method as described in Hasegawa so as to be able to detect the pilot symbol sequences so as to be able to determine the effect of the channel on the transmitted signal including data.

In regards to Claims 6 & 8, Hasegawa discloses a method of synchronizing with a pattern sequence as described above. However, Hasegawa does not disclose the second pattern sequence comprises a sequence of IQ pilot symbols, which are contained in a received data symbol stream, and the first pattern sequence comprises a reference pattern sequence of IQ pilot symbols.

AAPA discloses the second pattern sequence comprises a sequence of IQ pilot symbols, which are contained in a received data symbol stream, and the first pattern sequence comprises a reference pattern sequence of IQ pilot symbols Specification, Page 2, Paragraph 6) {Interpretation: The reference discloses a pilot symbol sequence is interpreted as a training sequence}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Hasegawa in view of AAPA satisfies the limitations of the claims.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (6,853,678) in view of Applicant Admitted Prior Art (AAPA) in further view of Sumasu et al. (2003/0179776).

In regards to Claim 7, Hasegawa in view of AAPA discloses a method of synchronizing with a pattern sequence as described above. However, Hasegawa in view of AAPA does not disclose the determining step, the IQ pilot symbols comprise QPSK modulated symbols, and the IQ pilot symbols of the second pattern sequence are periodically inserted into the data symbol stream at the transmitting device.

Sumasu discloses the IQ pilot symbols comprise QPSK modulated symbols, and the IQ pilot symbols of the second pattern sequence are periodically inserted into the

data symbol stream at the transmitting device (Fig. 2, element "PILOT SIGNAL" &

Paragraphs 25-26, 30) {Interpretation: The reference discloses the pilot signals to be

alternating between 1 and −1 which is interpreted as a QPSK symbol}. Therefore, it

would have been obvious to one of ordinary skill in the art at the time of the invention

that Sumasu discloses the IQ pilot symbols comprise QPSK modulated symbols,

and the IQ pilot symbols of the second pattern sequence are periodically inserted

into the data symbol stream at the transmitting device and this is implemented in the

method as described in Hasegawa in view of Sumasu so as to provide a simple

training signal with a distinct pattern so as to be able to differentiate the pilot signals

from the data signals.

8. Claims 12 (apparatus) & 15 (system) are rejected under 35 U.S.C. 103(a) as

being unpatentable over Hasegawa et al. (6,853,678) in view of Sumasu et al.

(2003/0179776).

In regards to Claim 12, Hasegawa discloses a method of synchronizing with a

pattern sequence as described above. However, Hasegawa does not disclose

storing means for storing the first pattern sequence.

Sumasu discloses a synchronization acquisition section comprising a storing

section storing the replica of the received pilot signal (Paragraph 59 & Paragraph

78). Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention that Sumasu discloses storing means for storing the first pattern

sequence and this is implemented in the apparatus as described in Hasegawa so as

to be able to perform a correlation of the received pilot signal for frame synchronization.

In regards to Claim 15, Hasegawa discloses a method of synchronizing with a pattern sequence as described above. Hasegawa does not disclose the transmitter comprising first modulation means for modulating data of the pattern sequence to be used for synchronization, according to a first modulation scheme, thereby providing the symbols of the pattern sequence; second modulation means for modulating payload data according to a second modulation scheme, thereby providing a data symbol stream; and means for inserting the symbols of the pattern sequence into the data symbol stream.

Sumasu discloses the transmitter comprising first modulation means for modulating data of the pattern sequence to be used for synchronization, according to a first modulation scheme, thereby providing the symbols of the pattern sequence (Fig. 2, element "PILOT SIGNAL") {Interpretation: The reference discloses a pilot signal of a specified symbols i.e. alternating 1 and −1}; second modulation means for modulating payload data according to a second modulation scheme, thereby providing a data symbol stream (Fig. 1, element 101); and means for inserting the symbols of the pattern sequence into the data symbol stream (Fig. 1, element 103-104). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sumasu discloses the transmitter comprising first modulation means for modulating data of the pattern sequence to be used for synchronization, according to a first modulation scheme, thereby providing the

symbols of the pattern sequence and this is implemented in the system as described

in Hasegawa so as to be able to differentiate the pilot signal from the data signal so

as to provide the correction of the received signal.

Allowable Subject Matter

9. Claims 2, 5, 10 & 16-17 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims.
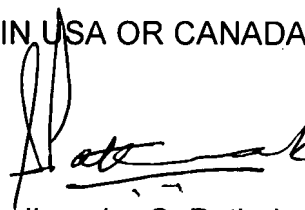
Conclusion

10. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sudhanshu C. Pathak whose telephone number

is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chieh M. Fan can be reached on (571)-272-3042.

The fax phone number for the organization where this application or proceeding

is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR

only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like

assistance from a USPTO Customer Service Representative or access to the

automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-

272-1000.

Sudhanshu C. Pathak
Examiner
Art Unit 2611